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CLAIMS

1. A method for protecting proliferating normal cells in an *in vitro* culture comprising said proliferating normal cells and tumor cells having an inactive p53 pathway, from the eradicative action of a chemotherapeutic compound (class B compound) which has the capability of

- exerting a cytotoxic action toward actively proliferating cells,
- not affecting survival and proliferative potential of interphase cells and
- being selected from the group consisting of folate inhibitors, nucleoside analogues, nucleotide syntesis inhibitors, vinca alkaloids, taxanes, colchicine derivatives, podophillotoxin derivatives, and topoisomerase inhibitors,

said method comprising administering to said culture the chemotherapeutic compound in combination with a protective compound (class A compound) having the capability of

- reversibly inhibiting cytodieresis of normal cells,
- non-inhibiting the biological action of said chemotherapeutic compound and,
- being selected from the group consisting of cytochalasins, with the exclusion of cytochalasin B, jasplakinolides, chondramides, isoindolinones, and latrunculines,

wherein a pre-treatment with said protective compound is carried out before the combined treatment with class A and class B compounds and

the administration of said protective compound resulting in the protection of at least part of said proliferating normal cells.

2. The method according to claim 1, wherein the pre-treatment with the protective compound results in the

arrest at interphase of at least part of said normal cells.

3. The method according to claim 1 or 2, wherein, after the combined treatment, a post treatment is carried out including interrupting the administration of said class B compound and washing said class B compound off the culture while maintaining the administration of said class A compound.

4. The method according to any of claims 1 to 3, wherein the combined treatment is carried out for a time greater than or equal to the cell cycle duration of said tumor cells having an inactivated p53 pathway.

5. The method according to any of claims 1 to 4, wherein the pre-treatment is carried out for a time greater than or equal to the cell cycle duration of said proliferating normal cell.

6. The method according to any of claims 3 to 5, wherein said washing step is carried out for a time greater than or equal to 3 hours.

7. The method according to any of claims 1 to 6, wherein said combined treatment, pre-treatment and/or post-treatment is repeated twice or more.

8. The method according to any of claims 1 to 7, wherein said protective compound is selected from the group consisting of the cytochalasin D, dihydrocytochalasin B, jasplakinolide, chondramide B and latrunculin B.

9. The method according to any of claims 1 to 8, wherein said chemotherapeutic compound is selected from the group consisting of trifluorothymidine, cytarabine, 6-thioguanine, 6-mercaptoputrine, gemcytabine, fludarabine, floxuridine, ftorafur, methotrexate, trimetrexate, raltitrexed, edatrexate, lometrexol, hydroxyurea, vincristine, vinblastine, vinorelbin, vindesine, paclitaxel, docetaxel, irinotecan, topotecan, 9-amino-S(20)-camptothecine.

10. The method according to any of claims 1 to 9,

wherein C3H10T1/2 cells or cells derived therefrom are used as model cells.

11. The method according to any of claims 1 to 10, wherein C3H10T1/2 cells or cells derived therefrom are used as model cells for identifying a protective compound and/or a chemotherapeutic compound.

12. Use of a compound selected from the group consisting of cytochalasins, with the exclusion of cytochalasin B, jasplakinolides, chondramides, isoindolinones, and latrunculines, having the capability of

- reversibly inhibiting cytodieresis of normal cells and
- non-inhibiting the biological action of a chemotherapeutic compound, which has the capability of
- exerting a cytotoxic action toward actively proliferating cells,
- not affecting survival and proliferative potential of interphase cells and
- being selected from the group consisting of folate inhibitors, nucleoside analogues, nucleotide syntesis inhibitors, vinca alkaloids, taxanes, colchicine derivatives, podophillotoxin derivatives, and topoisomerase inhibitors,

for the preparation of a medicament for protecting normal cells from the eradicative action of said chemotherapeutic compound in a treatment of a tumor form having an inactivated p53 pathway.

13. The use according to claim 12, wherein the combined treatment with the protective compound and the chemotherapeutic compound follows a pre-treatment with the protective compound alone.

14. The use according to claim 13, wherein the pre-treatment is carried out for a time greater than or equal to the cell cycle duration of said proliferating normal cell.

15. Use according to any of claims 12 to 14, wherein said tumor form is a tumor form having a low proliferating potential.

16. Use according to any of claims 12 to 14, wherein said tumor form is an hyperproliferative lesion caused by papillomavirus.

17. Use of a protective compound as defined in claim 12 for the preparation of a medicament for protecting normal cells from the eradicative action of a chemotherapeutic compound in a treatment of a pathological infection caused by microorganisms displaying no p53 function.

18. Use of a protective compound as defined in claims 12 for the preparation of a medicament for preventing and treating halopecia associated to a systemic treatment with a chemotherapeutic compound as defined in claim 12.

19. A pharmaceutical composition comprising a therapeutically effective amount of a protective compound as defined in claim 1, a therapeutically effective amount of a chemotherapeutic compound as defined in claim 1 and a pharmaceutically acceptable vehicle, carrier or auxiliary agent, wherein the release of the chemotherapeutic compound is retarded with respect to the release of the protective compound.

20. A pharmaceutical composition according to claim 19 wherein said protective compound is selected from the group consisting of the cytochalasin D, dihydrocytochalasin B, jasplakinolide, chondramide B and latrunculin B.

21. The pharmaceutical composition according to any of claims 19 or 20, wherein said chemotherapeutic compound is selected from the group consisting of trifluorothymidine, cytarabine, 6-thioguanine, 6-mercaptoputrine, gemcytabine, fludarabine, floxuridine, ftorafur, methotrexate, trimetrexate, raltitrexed,

edatrexate, lometrexol, hydroxyurea, vincristine, vinblastine, vinorelbin, vindesine, paclitaxel, docetaxel, irinotecan, topotecan, 9-amino-S(20)-camptothecine.

22. A kit of parts for selectively eradicating cells having an inactive p53 pathway and selectively protecting proliferating normal cells comprising:

- a protective compound as defined in claim 1 and
- a chemotherapeutic compound as defined in claim 1,

for the sequential use of the protective compound firstly and then the association of the protective compound and the chemotherapeutic compound in an *in vivo* and/or *ex vivo* therapy of a tumor form having an inactive p53 pathway.

23. A kit of parts according to claim 22, wherein said protective compound is selected from the group consisting of the cytochalasin D, dihydrocytochalasin B, jasplakinolide, chondramide B and latrunculin B.

24. A kit of parts according to any of claims 22 or 23, wherein said chemotherapeutic compound is selected from the group consisting of trifluorothymidine, cytarabine, 6-thioguanine, 6-mercaptoputrine, gemcytabine, fludarabine, floxuridine, ftorafur, methotrexate, trimetrexate, raltitrexed, edatrexate, lometrexol, hydroxyurea, vincristine, vinblastine, vinorelbin, vindesine, paclitaxel, docetaxel, irinotecan, topotecan, 9-amino-S(20)-camptothecine.

25. A kit of parts according to any of claims 22 to 24 wherein said tumor form is a hyperproliferative lesion caused by papillomavirus infection.

26. A kit of parts according to any of claims 22 to 24 for sequential use in the therapy of a pathological infection associated to a microorganism having no p53 function, wherein the administration of the combined compounds follows the administration of the protective compound alone.

27. A kit of parts according to any of claims 22 to 24 for selectively eradicating cells having an inactive p53 function and selectively protecting proliferating normal cells for sequential use in the method according to any of claims 1 to 11.